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GEOPHYSICAL VARIABLES AND BEHAVIOR: XXX. INTENSE PARANORMAL EXPERIENCES OCCUR DURING DAYS OF QUIET, GLOBAL, GEOMAGNETIC ACTIVITY[1]

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Summary.—25 well-documented (and published by Stevenson in 1970) cases of intense paranormal ("telepathic") experiences concerning death or illness to friends or family were analyzed according to the global geomagnetic activity (the aa index) at the times of their occurrence. The characteristics of these cases were representative of the general literature and occurred between the years 1878 and 1967. All 25 experiences were reported to have occurred on days when the geomagnetic activity was less than the means for those months. Repeated-measures analyses of variance for the daily aa indices for the 7 days before to the 7 days after the experiences confirmed the observation that they occurred on days that displayed much less geomagnetic activity than the days before or afterwards. These results are commensurate with the hypothesis that extremely low frequency fields, generated within the earth-ionospheric cavity but disrupted by geomagnetic disturbances, may influence some human behavior.

Alleged paranormal ("telepathic") experiences involving death and crisis of members from the immediate family are often associated with intense autonomic behaviors. One hypothesis (3) is that extremely low-frequency electromagnetic fields, generated naturally within the cavity between the earth and the ionosphere, can evoke these experiences. If this hypothesis is correct, then periods that disrupt the propagation of these fields, such as during geomagnetic disturbances, should be associated with fewer paranormal responses. Stated alternatively, these responses should be displayed predominantly when the geomagnetic field is relatively quiet.

To test this prediction, 25 published cases (6) that contained the day, month, and year of occurrence were analyzed. These cases were well documented and were representative of the general literature (2, 6). They were published before the general introduction of the hypothesis (1974), by an experienced researcher who did not concur with its basic premise. The aa measure was selected as the index of geomagnetic activity since these values were available for the years between the earliest (1878) and more recent (1967) cases. The index is considered a measure (in gammas) of daily global geomagnetic activity (1) and also contains values for the first and second halves of each day.

The day on which the experience occurred was considered Day 0. The average aa value for that day and for each of the seven days before and the seven days after the experience was tabulated for each case (15 days). Repeated measures in the analysis of variance were employed since successive daily aa measures within about two to three days are not independent. As an internal check for reliability, the cases that occurred before 1950 ($n = 12$) were compared with those that occurred after 1949 ($n = 13$)

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and those that involved death ($n = 13$) were compared with those that involved illness ($n = 12$). All analyses involved BMDP2V and SPSS software; the latter was used for data transformations, where appropriate, and for the nonparametric and *a posteriori*, t tests for correlated data.

The repeated measures indicated that the day on which the experiences occurred displayed much lower (means $\pm$ standard deviations) aa values (10 ± 3.5) than those on the day before (18.4 ± 10) and the day after (18.5 ± 10) and particularly for values more than two days before (-2 to -7) or more than two days after ($+2$ to $+7$) the event. The means for these days ranged between 20 and 30, with standard deviations between 6 and 40. Because the heterogeneity of variance was large, a nonparametric test was completed for all 25 cases. A Friedman's analysis ($\chi^2 = 38.51$, $df = 14$) indicated a significant ($p < .001$) difference between days. The mean rank for the days on which the experiences occurred was 3.90, while the days after and before averaged 6.56 and 6.64, respectively. All other days displayed average ranks between 7.58 and 9.80.

Square root transformations of the aa data reduced the heterogeneity to marginally acceptable criteria. A two-way analysis of variance with one factor repeated indicated no significant differences between the over-all aa activity for cases before 1950 ($M = 24.5 \pm 10.4$) or after 1949 ($M = 25.0 \pm 12.4$) or between death ($M = 24.6 \pm 14.2$) vs illness ($M = 23.7 \pm 8.0$) cases. There were, however, statistically significant ($p < .001$) differences on repeated measures between days ($F_{14,294} = 2.22$). *A posteriori* t tests for correlated data indicated that each day, particularly before one day and after one day around the experience had significantly higher aa values (all t values were greater than 4.00, $df = 24$).

To determine the upper limit of the temporal window that was required to observe the effect, the averages of the aa index for clusters of 3 or 5 days were analyzed. Friedman's test still demonstrated a significant difference ($p < .01$, $\chi^2 = 12$, $df = 4$) between triplets of days where the cluster containing the key day (0 ± 1 days) had the lowest rank (2.12) among clusters (e.g., -2 to -4 days) whose mean ranks ranged from 3.00 to 3.40. Repeated-measures analyses of variance on the square-root transformations indicated a significant ($p < .01$) difference ($F_{4,84} = 3.32$) between clusters; *a posteriori* t tests for correlated data indicated that the only significant ($p < .001$) differences were between the key-day cluster ($M = 17.3 \pm 8.9$) and the other clusters (Ms between 25.5 ± 12.1 and 28.4 ± 15.7); however neither the Friedman test nor the parametric analyses after square-root transformation showed any significant ($p > .05$) differences between the quintuplet clusters, indicating that the optimal window had been passed and the effect had been obscured.

The magnitude of the effect is indicated by the observation that the aa value on the day the experience occurred was lower than the average of that month for *all* 25 cases. A t test for correlated data indicated that there was no significant ($p > .01$) difference between the mean of the monthly aa averages (23.4 ± 7.8) and the average for the years (20.5 ± 4.9) in which they occurred.

The small value of the dispersion measure (Fig. 1) around the mean for the days of the experiences indicates they occurred during intervals of very similar magnitudes. On the other hand, the dispersions for the days before or after the experiences display much larger values, as might be expected by a random sampling of aa values. This would suggest that the absolute magnitude of the geomagnetic fluctuations on the day of the experience may be important as well as the *relative* decrease in magnitude compared to days before or afterwards.

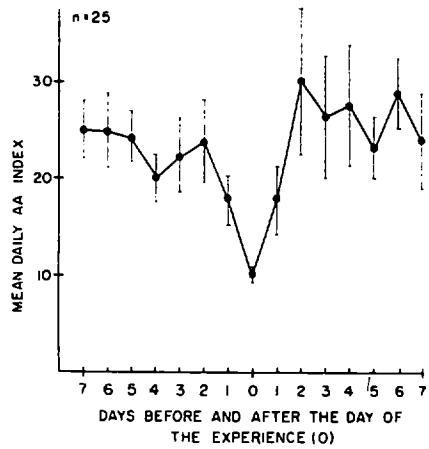

FIG. 1. Mean daily aa (average antipodal) index of global geomagnetic activity for the days of the putative paranormal experiences and for the seven days before and the seven days after the experiences. The averages are for 25 cases that occurred between the years 1878 and 1967. Bars indicated ±1 standard error of the mean.

Interestingly, "remote viewing" (5) responses tend to be worse during periods of enhanced geomagnetic activity[2] and the months in which most paranormal experiences occur also display the lowest U-index, another measure of geomagnetic activity (2). Although the mechanisms are unclear at this time (4), the occurrence of these behaviors is clearly associated with an environmental stimulus.[3]

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[2]Private communication from Dr. Harold E. Puthoff, Stanford Research Institute, Menlo Park, California.

[3]Note that the results have been replicated in a collection of 57 additional cases; see Schaut, G. B. and Persinger, M. A., Subjective telepathic experiences, geomagnetic activity and the ELF hypothesis: Part I. Data analyses. *PSI Research*, 1985, 4(1), 4-20.